

CLAIMS:

1. An isolated nucleic acid molecule having:

- (a) a nucleotide sequence as set forth in SEQ ID NO: 1;
- 5 (b) a nucleotide sequence encoding a polypeptide having the amino acid sequence shown in SEQ ID NO: 2;
- (c) a nucleotide sequence with at least 85% identity to the sequence of (a) or (b);
- 10 (d) a subsequence of a least 50 consecutive nucleotides of a sequence of (a), (b) or (c), with the proviso that said subsequence does not fall between nucleotide 1027 and nucleotide 1076 of SEQ ID NO: 1; or
- (e) a nucleotide sequence complementary to any of the nucleotide sequences in (a),(b), (c) or (d).

15 2. The nucleic acid of claim 1 having said nucleotide sequence with at least 85% identity to the sequence of (a) or (b).

20 3. The nucleic acid of claim 1 encoding a polypeptide having the amino acid sequence shown in SEQ ID NO: 2.

25 4. The nucleic acid of claim 1, having a subsequence of a least 50 consecutive nucleotides, which is antisense to SEQ ID NO:1 or a sequence having at least 85% identity thereto.

5. A nucleic acid vector comprising the nucleic acid molecule of any one of claims 1 to 4.

6. A host cell comprising the vector of claim 5.

30 7. An isolated polypeptide having:

- (a) an amino acid sequence as set forth in SEQ ID No. 2;
- (b) an amino acid sequence with at least 85% identity to the sequence of (a); or

- (c) a subsequence of at least 30 consecutive amino acids of the sequence of (a) or (b), with the proviso that said subsequence does not fall within amino acid nos.1102 and 1152 of SEQ ID NO:2.

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8. The polypeptide of claim 7, wherein said amino acid sequence in (b) comprises a conservative substitution of at least one amino acid in said amino acid sequence of SEQ ID NO: 2.

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9. The polypeptide of claim 7 or 8, wherein said polypeptide has stem cell differentiation inducing activity.

10. The polypeptide of claim 7, said polypeptide having the amino acid sequence shown in SEQ ID NO: 2.

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11. An antibody that specifically recognizes the polypeptide having the amino acid sequence shown in SEQ ID NO: 2 or SEQ ID NO: 4.

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12. An antibody that specifically recognizes tenascin W for use as a pharmaceutical.

13. The antibody of claim 12, wherein said antibody specifically recognizes tenascin W having the amino acid sequence shown in SEQ ID NO: 2 or SEQ ID NO: 4, for use as a pharmaceutical.

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14. The use of an antibody that specifically recognizes tenascin W for the manufacture of a medicament, for the prophylaxis or treatment of cancer.

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15. The use as claimed in claim 14, wherein said cancer is metastatic.

16. The use as claimed in claim 14 or 15, wherein the cancer is a solid tumour.

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17. The use as claimed in any of claims 14 to 16, wherein the cancer is a glioblastoma, prostate, lung, colorectal, osteo- or breast carcinoma.

5 18. The use of an antibody that specifically recognizes tenascin W for the prophylaxis or treatment of a bone disease resulting from excessive bone growth.

19. A composition comprising an isolated nucleic acid molecule having a nucleotide sequence selected from the group consisting of:

- 10 (a) a nucleotide sequence as set forth in SEQ ID No. 1 or SEQ ID No. 3;
- (b) a nucleotide sequence encoding the amino acid sequence shown in SEQ ID NO: 2 or SEQ ID NO: 4;
- (c) a nucleotide sequence with at least 35% identity to any one of the sequences of (a) or (b);
- 15 (d) a subsequence of a least 15 consecutive nucleotides of the sequence of (a), (b) or (c); and
- (e) a nucleotide sequence complementary to (a), (b), (c), or (d),

20 and a pharmaceutically acceptable excipient, diluent or carrier.

20. The composition of claim 19 wherein said nucleic acid molecule has a subsequence that is antisense to SEQ ID NO:1 or SEQ ID NO:3.

25 21. The composition of claim 19, said composition comprising said isolated nucleic acid molecule encoding the amino acid sequence shown in SEQ ID NO: 2 or SEQ ID NO:4.

30 22. A composition as claimed in any one of claims 19 to 21 for use as a pharmaceutical.

23. The use of the compositions of any of claims 19 to 21 for the manufacture of a medicament for the prophylaxis or treatment of cancer.

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24. The use of the compositions of any of claims 19 to 21 for the manufacture of a medicament for the prophylaxis or treatment of bone pathologies.

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25. A composition comprising tenascin-W and a pharmaceutically acceptable excipient, diluent or carrier.

26. The composition of claim 25, wherein said tenascin-W is recombinant.

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27. A composition as claimed in claim 25, wherein said tenascin-W is a polypeptide having:

(a) an amino acid sequence as set forth in SEQ ID No. 2 or 4;

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(b) an amino acid sequence with at least 35% identity to the sequence of (a); or
a subsequence of at least 30 consecutive amino acids of the sequence of (a) or (b).

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28. The composition of claim 27, said composition comprising said polypeptide encoding the amino acid sequence shown in SEQ ID NO: 4.

29. A composition as claimed in any one of claims 25 to 28 for use as a pharmaceutical.

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30. The use of the compositions of any one of claims 25 to 28 for the manufacture of a medicament for the treatment or prophylactic treatment of any disease or condition requiring increased tenascin-W levels, e.g. thrombosis, wound healing or atherosclerosis, or for the treatment or prophylactic treatment of a condition ameliorated by the promotion of osteogenesis, e.g. bone healing, osteoporosis.

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31. A method for treatment or prophylactic treatment of a disease or condition requiring increased tenascin-W levels, e.g. thrombosis, wound healing, atherosclerosis, bone healing and osteoporosis, said method comprising administering an effective amount of the compositions of any one of claims 25 to 28 to an individual in need of such treatment.
32. A method of inducing stem cell differentiation into bone cells, said method comprising contacting a suitable stem cell with an effective amount of the composition of any one of claims 25 to 28.
33. The method of claim 32, wherein said stem cell is a mesenchymal stem cell.
34. The use of tenascin-W as a stem cell marker.
35. A method for identifying modulators of tenascin W function, said method comprising contacting a test compound with a tenascin-W expressing cell and then measuring a change in one or more of:
- (a) cell proliferation, e.g. cell progression entering S-phase of the cell cycle;
 - (b) DNA synthesis;
 - (c) cell adhesion;
 - (d) cell spreading;
 - (e) focal adhesion and actin stress fibre formation on fibronectin; or
 - (f) cell binding to extracellular matrix (ECM)
- relative to when said test compound is absent.
36. A method as claimed in claim 35, further comprising measuring a change in tenascin-W expression in the absence and presence of said test compound.

37. A method as claimed in claim 35 or 36, wherein said cell is a human cell.

38. A method as claimed in any of claims 35 to 37, wherein said cell is present in a tissue sample.

39. A method as claimed in any of claims 35 to 37, wherein said cell is present in a blood sample.

40. A method for identifying modulators of tenascin W function, said method comprising:

- (a) contacting a test compound with tenascin W and/or alpha8 beta1 integrin, and
- (b) measuring the binding of said test compound to tenascin-W and/or alpha8 beta1 integrin, or
- (c) measuring a disruption of binding of tenascin-W to alpha8 beta1 integrin,

relative to when said test compound is absent.

41. A method as claimed in claim 40, further comprising measuring the binding of a control compound to tenascin-W.

42. A method as claimed in claim 40 or 41, wherein said tenascin-W is attached to a solid surface.

43. A method as claimed in any one of claims 41 to 42, wherein said binding is detected using an antibody labelled with a fluorescent label, a fluorescence quencher, a radioactive label, a scintillant or an enzyme.

44. A method as claimed in any one of claims 41 to 43, wherein a decrease in binding of tenascin-W to alpha8 beta1 integrin is indicative of an inhibitor of tenascin W function.

45. A substance for the prevention or the prophylactic treatment of a disease or condition dependent on tenascin-W, identified by a method as claimed in any of claims 40 to 44.

- 5 46. A method of diagnosing or prognosing cancer comprising:
- (a) analysing a sample obtained from an individual for the presence of tenascin-W protein or transcript
 - (b) correlating the presence of tenascin-W with an unfavourable prognosis or diagnosis.

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47. A method of diagnosing or prognosing cancer as claimed in claim 46, comprising correlating in (b) an elevated level of tenascin-W protein or transcript relative to healthy tissue with an unfavourable prognosis or diagnosis.

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48. A method of diagnosing or prognosing cancer as claimed in any of claims 46 to 47, wherein said sample is blood serum or plasma from an individual.

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49. A method of diagnosing or prognosing cancer as claimed in any of claims 46 to 48, further comprising analysing said sample for the presence of alpha 8 integrin expression, the presence of said alpha 8 integrin correlating with an unfavourable prognosis or diagnosis.

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50. A method of diagnosing or prognosing cancer as claimed in any of claims 46 to 49, further comprising propagating cells in said sample in cell culture.

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51. A method of diagnosing or prognosing cancer as claimed in any of claims 48 to 50, wherein said tenascin-W protein is detected using an antibody specific for tenascin-W.

52. A method of diagnosing or prognosing cancer as claimed in any of claims 48 to 50, wherein said tenascin-W transcripts are detected using a polymerase chain reaction.